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84/W/M/1 Nitrogen, Sulphur and Storage Proteins - S. Wheat, S Barley - Mixed Crops

Rothamsted Research

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84/W/M/1

MIXED 1

NITROGEN, SULPHUR AND STORAGE PROTEINS

Object: To study the effects of two nitrogen rates and sulphur on the storage proteins and yield of four varieties of s. wheat and s. barley - Woburn Butt Close.

Sponsor: J. Franklin.

Design: For each crop: 4 randomised blocks of 4 plots split into 4.

Whole plot dimensions: 4.0 x 19.0.

Treatments: All combinations of:-

Whole plots

1. VARIETY

Varieties:

S. wheat	S. barley	S. wheat	S. barley
HIGHBURY	GEORGIE	Highbury	Georgie
M BUTLER	JUPITER	Maris Butler	Jupiter
SANDOWN	PORTER	Sandown	Porter
TIMMO	TASMAN	Timmo	Tasman

SUB PLOTS

2. N Nitrogen fertilizer (kg N) as 'Nitro-Chalk':

50
200

3. S Sulphur

0 None
50+8 50 kg S as gypsum at sowing + 8 kg S as 'Thiovit' spray at growth stage 30

Basal applications: Manures: Dolomite at 270 kg, triple superphosphate at 180 kg, muriate of potash at 160 kg. Weedkillers: Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 3.5 l) in 280 l. Fungicide: Propiconazole at 0.12 kg in 250 l on three occasions applied with the insecticide on the first and third occasions. Insecticide: Pirimicarb at 0.14 kg on two occasions.

Seed: Spring wheat varieties sown at 190 kg.
Spring barley varieties sown at 160 kg.

Cultivations, etc.:- Ploughed: 7 Nov, 1983. Spring-tine cultivated with crumbler attached, seed sown: 19 Mar, 1984. Basal manures, test N and gypsum applied: 21-22 Mar. Weedkillers applied: 16 May. 'Thiovit' applied: 18 May. Fungicide with insecticide applied: 24 May, 27 June. Fungicide applied: 15 June. Spring barley combine harvested: 20 Aug. Spring wheat combine harvested: 21 Aug.

NOTE: Samples were taken at harvest for determination of storage proteins.

84/W/M/1

S. WHEAT

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

N	50	200	MEAN
VARIETY			
HIGHBURY	2.82	4.44	3.63
M BUTLER	2.58	3.51	3.05
SANDOWN	2.73	4.07	3.40
TIMMO	2.48	3.65	3.06
MEAN	2.65	3.92	3.29

S	0	50+8	MEAN
VARIETY			
HIGHBURY	3.57	3.69	3.63
M BUTLER	2.97	3.13	3.05
SANDOWN	3.29	3.51	3.40
TIMMO	3.10	3.03	3.06
MEAN	3.23	3.34	3.29

S	0	50+8	MEAN
N			
50	2.64	2.67	2.65
200	3.83	4.01	3.92
MEAN	3.23	3.34	3.29

N	50		200	
S	0	50+8	0	50+8
VARIETY				
HIGHBURY	2.98	2.66	4.16	4.71
M BUTLER	2.43	2.73	3.50	3.52
SANDOWN	2.54	2.92	4.05	4.10
TIMMO	2.61	2.35	3.58	3.71

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	VARIETY	N	S	VARIETY N
SED	0.202	0.098	0.098	0.245
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: VARIETY				0.196

TABLE	VARIETY S	N S	VARIETY N S
SED	0.245	0.139	0.314
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: VARIETY	0.196		0.278

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S. WHEAT

GRAIN TONNES/HECTARE

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	9	0.286	8.7
BLOCK.WP.SP	36	0.392	11.9

SUB PLOT AREA HARVESTED 0.00120

S. BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

N	50	200	MEAN
VARIETY			
GEORGIE	3.86	5.83	4.85
JUPITER	4.04	5.75	4.89
PORTER	4.03	5.49	4.76
TASMAN	3.82	5.27	4.55

MEAN	3.94	5.59	4.76
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S	0	50+8	MEAN
VARIETY			
GEORGIE	4.83	4.86	4.85
JUPITER	4.71	5.08	4.89
PORTER	5.00	4.52	4.76
TASMAN	4.60	4.49	4.55

MEAN	4.79	4.74	4.76
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S	0	50+8	MEAN
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N	50	200	MEAN
50	3.95	3.92	3.94
200	5.62	5.56	5.59

MEAN	4.79	4.74	4.76
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N	50	200	50+8	
S	0	50+8	0	50+8
VARIETY				
GEORGIE	3.95	3.78	5.71	5.95
JUPITER	3.77	4.31	5.65	5.86
PORTER	4.15	3.91	5.86	5.13
TASMAN	3.95	3.70	5.25	5.29

84/W/M/1

S. BARLEY

GRAIN TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	VARIETY	N	S	VARIETY N
SED	0.229	0.174	0.174	0.337
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: VARIETY				0.349

TABLE	VARIETY S	N S	VARIETY N S
SED	0.337	0.246	0.485
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: VARIETY	0.349		0.493

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	9	0.324	6.8
BLOCK.WP.SP	36	0.697	14.6

SUB PLOT AREA HARVESTED 0.00120